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In spite of the rapid development of the wheat-raising industry, it is to be remembered that Canada's maximum yield is relatively small when brought into comparison with that of the United States. The 166,744,000 bushels of 1909 is not such an enormous quantity after all when balanced against the 713,000,000 bushels of the latter country in the same year. Besides, so much is heard nowadays about the great Canadian wheat fields and their wonderful harvests that one is likely to forget that as early as 1867 the United States was producing a wheat crop larger than the average Canadian crop of the present day. But that which fans the enthusiasm of the people of the western provinces as well as that of prospective settlers is not so much what has already been accomplished as the bright prospects for the future. On both sides of the international boundary line it is just beginning to be realized that a large, if not the best, part of the natural wheat area of this continent lies to the northward of the forty-ninth parallel of latitude. The Canadians are justly proud of the results already achieved in the evolution of their wheat industry; but, though the prospects of expansion during the next decades are full of promise, the time by no means is in sight as yet when their ambition to lead the world in the output of this cereal will become a reality.

LATEST HIMALAYAN EXPLORATIONS OF THE WORKMANS*

Dr. W. Hunter Workman and Mrs. F. Bullock Workman have recently returned to India from their seventh Himalayan expedition. They have explored the region, much of it virgin ground, south of the Baltoro glacier in Baltistan lying between that glacier and the Shyok and Saltoro valleys, and extending from a line some distance west of the meridian of Masherbrum to the Kondus-Siachen watershed on the east; embracing the Kondus and Hushe river-basins and the glaciers tributary to them. The whole region is covered with giant mountains, 21,000 to over 25,000 feet high, enclosing between their steep and, in places, perpendicular walls, large, sharply descending glaciers. Seven glaciers were explored, of which

* Dr. W. Hunter Workman has sent to the *Bulletin* the following summary of the explorations of Mrs. Workman and himself, during the past season, in the region of great glaciers and lofty summits embraced between 34°-36° N. Lat. and 76°-78° E. Long.

four were mapped. No traces of three passes reputed to lead from this region to the Baltoro could be found, all glacier-reservoirs being enclosed by abrupt, unscalable rock-walls in which no openings exist, and the upper portion of most of the glaciers are of such steep incline and so crevassed and broken into séracs as to be impassable.

After the exploration of this district was concluded, the Bilapho glacier still farther east, some 20 miles long, the surface of which is greatly broken and moraine-covered, was ascended to the ice-covered pass at its head, about 18,550 feet above sea-level as determined by boiling point readings compared with simultaneous ones at the lower Government Meteorological Station at Skardo. From this pass a broad glacier about fifteen miles long was descended, leading to the great Siachen glacier discovered in 1909 by Dr. T. G. Longstaff, who with two companions and coolies descended by the same route to its edge, where they remained one day and then retraced their steps over the Bilapho Pass, neither ascending nor descending the Siachen from the point where they reached it.

The expedition on reaching the Siachen at a point about 16,000 feet in altitude and some twenty miles from its source, established a base camp on a projecting spur, from which further exploration was carried out.

The Siachen glacier, the largest mountain glacier yet discovered in Asia, has a probable length of fifty miles, if not more. Its upper half has a very complicated topography, drains a great area, and is fed by seven large branches nearly as wide as the main stream. Two of the latter were ascended, the first to a point at its source, fifteen miles above its junction with the main glacier on the flank of the giant-peak K₃ at an altitude of 20,000 feet, above which a perpendicular rock-precipice rises to the summit 24,415 feet in height; the second, after a distance of twenty-five miles, opening into an extensive ice-plateau lying at and above an altitude of 19,000 feet, which stretches out ten to fifteen miles farther to a snow pass descending to the east towards the Karakoram Pass. Besides these large branches, innumerable smaller ones descend to and feed the glaciers from the mountains rising above it.

The highest mountains lie to the west of the glacier on the border of the region earlier explored by the expedition and far to the north, where the Siachen approaches the head of the Baltoro, many of them rising as separate peaks or massifs of great size. One of the most impressive of these is the peak K₃, with two summits, of 25,210 and 25,415 feet respectively, marked on the Survey map as two

separate peaks, which dominates not only the Siachen but also the Dong Dong and the upper end of the Bilapho glacier.

Three elevations on the northeastern wall of the Siachen, one of which (it is not certain from his description, map, and photos, which) was named by Dr. Longstaff, Teram Kangri, were triangulated with theodolite by Dr. Calciati. His final figures are not yet rendered, but preliminary calculations indicate that the altitude of the highest of these will not vary far from 24,000 feet, quite a difference from the altitude assigned by Dr. Longstaff to Teram Kangri of over 30,000 feet as worked out by the Indian Survey from some angles taken by him with a clinometer from three points, which impossible height Dr. Longstaff reduced to 27,610 feet. A triangulation of the same three elevations has been made the past season from four trigonometrical stations south of the Siachen, with results not very different from those obtained by Dr. Calciati. So far as known, the exact figures of the Survey measurement have not been published, but Teram Kangri can no longer be counted among the Himalayan peaks of the first class.

The expedition reached the Siachen on Aug. 19, rather late in the season for the exploration of a large glacier, especially when the only avenue of retreat in the case of bad weather was over a high and, in that case, dangerous snow-pass. As the weather proved favorable, several days together being cloudless, a month was spent in a first exploration of a large portion of the upper half of this most interesting giant among glaciers, although the immediate examination of its ultimate sources extending high up into the region of eternal snows had to be omitted on account of the shortening days and long nights. For the same reason the cold became rather trying, especially when the wind was strong. On several occasions a temperature of 5° F. was recorded at 16,000 feet.

Among other high points attained was the summit of a sharp peak of 21,000 feet, commanding an extended view of 35 miles of the Siachen as well as of its wonderful entourage of mountains. During the month spent on the glacier all camps were made at altitudes of from 16,000 to over 19,000 feet.

Many interesting observations were made, not only of a geographical and physiographical nature, but also regarding the structure and surface-formations of glaciers, of which the Siachen furnishes examples striking to an unusual degree. Some of these observations relate to phenomena not yet, so far as known, brought forward. A large collection of photographs, panoramas, and telephotographs was secured.